

Application No. 10/675,219
Amendment dated January 12, 2005
Reply to Office Action of Application Filed Herewith

Remarks

1.

The Examiner has rejected claims 34-37 under 35 U.S.C. §102(e) as anticipated by Gonzalez U.S. Patent No. 6,561,642. It is submitted that the Examiner has either misinterpreted Gonzalez or the claims of the present application. Claims 34-37 cover the removal, by coating, shaving or singeing of fibers in the form of fuzz, dust or lint from the surface of the substrate that could clog the ink-jet printing nozzle. This feature is described in the application as follows:

"The reliability of the printing processes may be enhanced, according to certain aspects of the invention, by preconditioning the substrate, such as by precoating, shaving or singeing of the surface to be printed. Such preconditioning eliminates dust and lint that could collect on the print heads and potentially contribute to clogging of the nozzles." [Specification, page 8, lines 24-27.]

and

"The printing machine 600 has a stationary housing 601 with a longitudinal extent represented by arrow 602 and a transverse extent represented by arrow 603. The machine 600 has a front end 604 from which is advanced a substrate web of textile material 605 downstream in the longitudinal direction. The material may be a greige goods textile material or some other material on which printing is desired. Where the material is a textile, it can have been preconditioned by precoating, shaving or singeing of the surface to be printed to eliminate dust and lint that could collect on the print heads and potentially contribute to clogging of the nozzles. Failure to remove the fuzz can cause the fuzz or dust to be sucked into the nozzle orifices as the flow reverses between dot ejections, which could clog the nozzles." [Specification, page 16, lines 23-30.]

Gonzales discloses a knife for separating two web layers of the substrate. Gonzales states in the description cited by the Examiner:

"Turning now to FIG. 6B, there is shown a second embodiment first roller 155. Second embodiment first roller 155 is substantially similar to first embodiment first roller 120, except that second embodiment first roller 155 includes an elongate knife edge or blade 157 having a sharp edge portion 159. The sharp edge portion 159 is capable of engaging the interface between web 20 and substrate 30 for easing separation of web 20 from substrate 30."

Accordingly, Gonzeles fails to disclose the removal of "fibers" from the surface of the substrate, which is an element of claims 34-37, and thus fails to anticipate claims 34-37. To further avoid a mistaken interpretation of claims 34-37, claim 34 has been amended to more particularly define that such fibers are being removed.

2.

The Examiner has rejected claims 76-81 and 83-84 under 35 U.S.C. §102(e) as anticipated by Gonzalez. Claim 82 is not anticipated. Independent claims 76 and 84 have been

Application No. 10/675,219
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amended to include a limitation from claim 82 that is not anywhere disclosed in Gonzalez, namely certain features relating to UV curable ink and the partial curing thereof. Accordingly, these claims are not anticipated by Gonzalez. Their patentability is further discussed in connection with the rejection under 35 U.S.C. §103(a) of claim 82 below. Claim 83 is being canceled.

3.

The Examiner has rejected claims 61-61 under 35 U.S.C. §102(e) over Codos et al. PCT publication WO 01/17780.

"The fabric on which the jetted ink has been thereby partially UV cured is then passed through an oven where it is heated to about 300°F for from about 30 seconds up to about three minutes. Forced hot air may be used to apply the heat in the oven, but other heating methods such as infrared or other radiant heaters may be used. *Alternatively, heated platens may be used to heat the ink bearing material, and such platens are particularly effective in bringing the material quickly up to the 300°F temperature.* The UV energy level, oven heating temperature and oven heat time may be varied within a range of the above listed values depending on the nature of the fabric, the density, type and composition of the applied ink; and the speed of the fabric during processing relative to the UV curing light head. Thus, a higher ink density applied to the fabric will generally require more UV energy, higher oven heating temperature, longer oven heat time or a combination of these variables, to effect the necessary curing on the particular fabric. With dye-based inks, the temperature should be that most effective to set the dye, often over 350°F, for example, at about 385°F. [Specification, page 8, lines 13-23.]"

and

"Below the nip of rollers 618 and 619 is provided a heater 660. The web of material 605 enters the heater 660, which heats the substrate 605 to reduce the content of uncured monomers of the UV ink in the same manner as the heating station 26 described above in connection with the embodiment 10 of Fig. 1. *Rather than using heated air, as in the case of heating station 26, the heater 660 contacts the substrate 605 with one or more heated platens, which quickly bring the substrate to a temperature of 360°F within approximately one to two seconds. The heating station or heater 660 has a path therethrough of from about thirty inches to about forty inches for the web 605. The heater 660 includes an initial heated stainless steel bullnose platen 661 is positioned to contact the under surface of the material 605 opposite the side on which the ink from the print heads 640,641 has been deposited. The bullnose platen 661 brings the substrate 605 to a desired temperature of 300-380° in one to two seconds, where hot air takes from 30 seconds to 3 minutes. The web 605 passes over a second bullnose platen 662 downstream of the first platen 661, which contacts the ink bearing side of the substrate 605, insuring that the temperature of the substrate 605, and particularly the ink, is at the desired temperature throughout the thickness of the material 605. Once brought to temperature, the substrate 605 is maintained at the desired temperature by a series of additional plates 663,664. In lieu of the additional plates, other ways of maintaining the desired temperature for another thirty seconds more or less, such as with heated air or radiant heaters, would be adequate. An exhaust system (not shown) connects to the heater 660 to exhaust and dispose of any vapors that may contain monomers of the ink. Such exhaust may be connected to an electrostatic carbon filter and the air therefrom returned to the environment.* [Specification, page 19, lines 8-25.]

Application No. 10/675,219
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The Codos et al. reference discloses a heating station 26. The specific embodiments of a heating station that are disclosed in the Codos et al. reference included a heated forced air dryer or an infrared dryer, all of which are non-physical contact heating devices that provide radiant or convection heating. Claims 61-62 are amended to change "heated surface" and "thermally contact" to the more specific language reciting a solid physical surface or "heated platen" to "physically and thermally contact" the substrate. The specification quoted above describes the particular advantages of this over the other embodiments described in the cited Codos et al. reference. Accordingly, it is submitted that these claims, as amended, are not anticipated by the reference. Furthermore, the advantages which the claimed embodiment provides over the embodiments of the reference are evidence that these claims are not obvious in light of the reference, which in no way suggests this embodiment.

4.

The Examiner has rejected claims 48-50, 64 and 66-67 under 35 U.S.C. §103 as unpatentable over Codos et al. PCT publication WO 01/17780 in view of Gonzalez U.S. Patent No. 6,561,642. Claims 48-50 have been amended to make it clear that the claim relates to a non-stick material that protects the table of the machine and not a layer on the substrate web that is to be printed. Further, these claims have been amended to recite the features of the UV curable ink

Neither of the references deals with the printing of porous or mesh material. When such material is printed by an ink jet process, ink passes through it and collects on the table, only to be smeared onto the backside of the substrate. These claims deal with a solution that is not discussed in either of the applied references. In the solution, the UV ink is exposed to UV light on the surface of the table, which at least partially cures the ink so it no longer behaves as a purely liquid ink. Rather, the ink remains on the table as the substrate passes over it without being wiped off by the substrate, later to be removed by wiping or otherwise from the table. Note that published U.S. Patent Application No.20020168206, cited in the IDS, which relates to the problem of ink being jetted through porous materials, does not discuss the UV ink solution of the present invention.

Application No. 10/675,219
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As clarified by the amendment, the cited references do not present a *prima face* case for the obviousness of these claims. Accordingly, claims 48-50 are allowable.

Claims 64 and 66 have been canceled and claim 67 is now dependent on claim 65 and no longer within the scope of this rejection.

5.

The Examiner has rejected claims 51-60, 68-75 and 82 under 35 U.S.C. §103 as unpatentable over Gonzalez U.S. Patent No. 6,561,642 in view of Codos et al. PCT publication WO 01/17780.

Claims 51-60 and claims 76-82 have been amended such that they are an apparatus counterpart to claims 48-50 discussed in section 4 above, and are patentable for the same reasons as those claims.

Claims 68-75 recites structure that is not suggested in either of the cited references. It covers an ink jet printer which has a table that extends through a printing station along with guides that hold the substrate out of contact with the table, so that ink jetted through a substrate that is porous will collect on the table, out of contact with the back of the substrate. Neither reference deals with the problem of ink jetted through a porous substrate onto printer structure behind the substrate. In Codos, the ink, at most, wicks into the material or penetrates into the surface of the material. In Gonzalez, a protective layer on the web itself keeps ink from transferring to the back of the material when it is rolled. In addition, while published U.S. Patent Application No.20020168206, cited in the IDS, relates to the problem of ink being jetted through porous materials, it proposes to remove a portion of the underlying table to form a gap in which is positioned a trough to collect liquid ink. Further, it does not discuss the UV ink solution recited in dependent claim 73.

It is submitted that claims 68-75 are patentable.

6.

Claim 63 is canceled.

Application No. 10/675,219
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7.

Claim 65, which was objected as being dependent on a rejected base claim, but otherwise allowable, has been rewritten in independent form. Note that certain duplicated elements have been deleted from the claim.

CONCLUSION

It is submitted that the claims, as amended, are allowable and that the application is now in condition for allowance. Accordingly, an early allowance is respectfully requested.

If there is any additional matter that may be resolved by telephone or fax, the Examiner is invited to contact the undersigned to expedite issuance of this application.

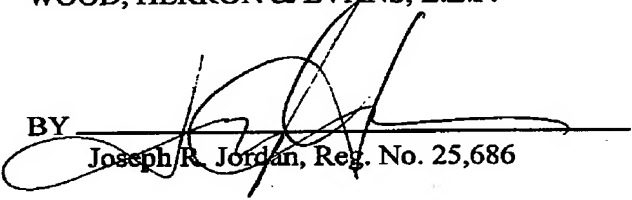
Application No. 10/675,219
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Applicants acknowledge that a Two Month Extension of Time is required in connection with this response and requests the Examiner to consider this a Request for same. Applicants do not believe that any other fees are due in connection with this response other than the extension fee which is requested to be charged to the below deposit account. However, if such petition is due or any other fees are necessary, the Commissioner may consider this to be a request for such and charge any necessary fees or credit any overpayment to deposit account 23-3000.

Respectfully submitted,

WOOD, HERRON & EVANS, L.L.P.

BY

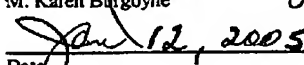

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I hereby certify that this correspondence is being transmitted via facsimile to 703-872-9306 to Assistant Commissioner for Patents, Washington, D.C. 20231 on January 12, 2005


M. Karen Burgoyne

Date


Jan 12, 2005